ISSN 0021-5198

# THE JAPANESE JOURNAL OF PHARMACOLOGY

Volume 60 1992

Official Publication
of
The Japanese Pharmacological
Society

THE JAPANESE JOURNAL OF

# PHARMACOLOGY

Published Monthly by The Japanese Pharmacological Society

Volume 60 1992

**Chief Editor**

Noboru Toda (Ohtsu)

**Press Editor**

Tomoh Masaki (Kyoto)

**Editors**

Masao Endoh (Yamagata)
Chiyoko Inagaki (Moriguchi)
Hideaki Karaki (Tokyo)
Eishichi Miyamoto (Kumamoto)
Takeshi Miyata (Kumamoto)
Masamichi Satoh (Kyoto)
Issei Takayanagi (Funabashi)
Hajime Yasuhara (Tokyo)

**Language Editor**

Stephanie M. Jung

**Editorial Assistant**

Yoko Takezaki

**Editorial Advisory Board**

Youichi Abe (Kagawa)
Norio Akaike (Sendai)
Michihiro Fujiwara (Fukuoka)
Yasuo Gomi (Kanazawa)
Reizo Inoki (Suita)
Koichi Ishikawa (Tokyo)
Morio Kanno (Sapporo)
Masahiro Kawamura (Tokyo)
Yukio Kuroiwa (Tokyo)
Naomasa Miki (Suita)
Hideki Moritoki (Tokushima)
Hiroichi Nagai (Gifu)
Taku Nagao (Tokyo)
Yasuyuki Nomura (Sapporo)
Sachiko Oh-ishi (Tokyo)
Motoo Oka (Tokushima)
Susumu Okabe (Kyoto)
Tomio Okamura (Ohtsu)
Hiroshi Saito (Tokyo)
Masashi Sasa (Hiroshima)
Satoshi Takeo (Hachioji)
Hiroshi Watanabe (Toyama)
Kazuo Watanabe (Chiba)
Itaru Yamamoto (Okayama)

**Address for correspondence regarding manuscripts and domestic subscriptions:** Editorial Office, The Japanese Pharmacological Society, c/o Department of Pharmacology, Faculty of Medicine, Kyoto University, Sakyo-ku, Kyoto 606-01, Japan
TEL: 075-761-8789 FAX: 075-771-8972

**Subscription rate:** Annual domestic subscription price is ¥15,000 (including postage).
**Subscription orders from abroad** should be sent to one of the following agencies:
Japan Publications Trading Co., Ltd., P.O. Box 5030, Tokyo International, Tokyo 100-31, Japan
Kyowa Book Co., Inc., 1-38 Kanda Jimbo-cho, Chiyoda-ku, Tokyo 101, Japan
Maruzen Co., Ltd., Import & Export Department, P.O. Box 5050, Tokyo International, Tokyo 100-31, Japan
Nihon Faxon Co., Ltd., 7-8-13 Nishi Shinjuku, Shinjuku-ku, Tokyo 160, Japan

**Supported** in part by a Grant-in-Aid from the Ministry of Education, Science and Culture, Japan for Publication of Scientific Research Results.

**Notice about photocopying:** In order to photocopy any work from this publication, except for legally permitted cases, you or your organization must obtain permission from either of the following organizations which have been delegated for copyright clearance by the copyright owner of this publication:
Except in the USA: Akasaka Branch Office, Japan Reprographic Rights Center, c/o The Copyright Council of the Academic Societies, 704-42-6 Akasaka 9-chome, Minato-ku, Tokyo 107, Japan TEL: 03-3475-4621・5618 FAX: 03-3403-1738
In the USA: Copyright Clearance Center, Inc., 27 Congress St., Salem, MA 01970, USA TEL: 508-744-3350 FAX: 508-741-2318

**Copyright** © The Japanese Pharmacological Society 1992

# CONTENTS

Volume 60 • 1992

## Regular Papers


**Number 1 September 1992**

| | | |
|---|---|---|
| **MCI-826 Is a Potent and Selective Antagonist of Peptide Leukotrienes (p-LTs) and Has Characteristics Distinctive from Those of FPL 55712** | Shigekatsu Watanabe-Kohno, Hideki Yamamura, Takeshi Nabe, Michiaki Horiba and Katsuya Ohata | 1 |
| **Anthralin, a Non-TPA Type Tumor Promoter, Synergistically Enhances Phorbol Ester-Caused Prostaglandin $E_2$ Release from Primary Cultured Mouse Epidermal Cells** | Eriko Aizu, Satoshi Yamamoto and Ryuichi Kato | 9 |
| **Different Modes of Potentiation by $\beta$-Eudesmol, a Main Compound from *Atractylodes Lancea*, Depending on Neuromuscular Blocking Actions of *p*-Phenylene-Polymethylene Bis-Ammonium Derivatives in Isolated Phrenic Nerve-Diaphragm Muscles of Normal and Alloxan-Diabetic Mice** | Masayasu Kimura, Ikuko Kimura, Masashi Muroi, Katsunao Tanaka, Hiroshi Nojima and Teruko Uwano | 19 |
| **Assessment of the Ambulation-Increasing Effect of Ketamine by Co-administration with Central-Acting Drugs in Mice** | Yoshitaka Uchihashi, Hisashi Kuribara and Sakutaro Tadokoro | 25 |
| **Protective Effect of Minaprine against the Abnormal Changes of 2-Deoxyglucose Uptake by Rat Hippocampal Slices Induced by Hypoxia/Hypoglycemia** | Kohtaroh Kodama, Shigenobu Shibata and Showa Ueki | 33 |
| **Cetraxate Improves Ethanol-Induced Gastric Mucosal Congestion in Anesthetized Dogs** | Sunao Kawano, Nobuhiko Hayashi, Shingo Tsuji, Hideyuki Fusamoto and Takenobu Kamada | 39 |
| **Induction of Gastric Lesions by 2-Deoxy-D-Glucose in Rats Following Chemical Ablation of Capsaicin-Sensitive Sensory Neurons** | Jiro Matsumoto, Koji Ueshima, Tomohisa Ohuchi, Koji Takeuchi and Susumu Okabe | 43 |

**Number 2 October 1992**

| | | |
|---|---|---|
| **Studies on the Mode of Action of Ambrein as a New Antinociceptive Compound** | Sadek A. Taha | 67 |
| **Inhibitory Effect of a Novel Antianginal Agent, E4080, on ST Segment Elevation Induced by Vasopressin in Anesthetized Guinea Pigs** | Kohtarou Kodama, Hideyuki Adachi, Toshiaki Ogawa and Hideto Ohhara | 73 |
| **Inhibitory Effects of Hyaluronan on [$^{14}$C]Arachidonic Acid Release from Labeled Human Synovial Fibroblasts** | Kenji Tobetto, Tadashi Yasui, Takao Ando, Masahiro Hayaishi, Noriko Motohashi, Masaki Shinogi and Itsuhiko Mori | 79 |
| **Inhibitory Action of Tranilast, an Anti-Allergic Drug, on the Release of Cytokines and $PGE_2$ from Human Monocytes-Macrophages** | Haruo Suzawa, Shinji Kikuchi, Kiyoshi Ichikawa and Akihide Koda | 85 |
| **The Mechanism Involved in the Inhibitory Action of Tranilast on Collagen Biosynthesis of Keloid Fibroblasts** | Haruo Suzawa, Shinji Kikuchi, Nobuhiko Arai and Akihide Koda | 91 |
| **Existence of a Human Urinary Trypsin Inhibitor (Urinastatin)-Like Substance in the Rat Brain** | Tadahiro Shikimi, Keisuke Hattori and Shuji Takaori | 97 |
| **Participation of GABAergic Systems in the Production of Antinociception by Various Stresses in Mice** | Shogo Tokuyama, Masakatsu Takahashi and Hiroshi Kaneto | 105 |
| **A Stable Metabolite, Arg-Pro-Pro-Gly-Phe, of Bradykinin in the Degradation Pathway in Human Plasma** | Chikako Shima, Masataka Majima and Makoto Katori | 111 |
| **Amphetamine-Antagonistic Property of 4-Phenyltetrahydroisoquinoline: Effect on Noradrenaline Release in Spinal Cord Slices** | Mitsutoshi Satoh, Shigeru Ohta, Taku Nagao, Masaaki Hirobe, Hideomi Fukuda and Hideki Ono | 121 |
| **The Flexor Reflex Mediated by Group II Afferent Fibers: Effects of Morphine-HCl and Mephenesin** | Katsuhiko Sakitama and Michio Ishikawa | 127 |
| **Effects of Morphine on Responses of Nociceptive Ventrobasal Thalamic Neurons in Diabetic Rats** | Junzo Kamei, Taro Aoki, Hideki Hitosugi, Yuriko Iwamoto and Yutaka Kasuya | 133 |

## Number 3 November 1992


| | | |
|---|---|---|
| **Chronopharmacology of Furosemide in Rats with Amikacin-Induced Acute Renal Damage** | Akio Fujimura, Tsuyoshi Shiga, Kyo-ichi Ohashi and Akio Ebihara | 153 |
| **Characterization of the Triphenyltin-Induced Increase in Intracellular $Ca^{2+}$ of Mouse Thymocytes: Comparison with the Action of A23187** | Yasuo Oyama, Lumi Chikahisa, Katsuhiko Noda, Hiromi Hayashi and Fukiyo Tomiyoshi | 159 |
| **Pharmacological Characterization of Contractile Responses Induced by $\alpha_1$-Agonists, Norepinephrine and Clonidine, by Selective Antagonists of Their Subtypes in Rabbit Thoracic Aorta** | Mitsutoshi Satoh, Chiemi Kojima and Issei Takayanagi | 169 |
| **Histamine-Induced Depolarization and the Cyclic AMP–Protein Kinase A System in Isolated Guinea Pig Adipocytes** | Chiaki Kamei, Tomohito Mukai and Kenji Tasaka | 179 |
| **Studies on the Antinephritic Effects of Plant Components (6): Anti-nephritic Effects and Mechanisms of Phellodendrine (OB-5) on Crescentic-Type Anti-GBM Nephritis in Rats (2)** | Tomohisa Hattori, Kazuya Furuta, Kazumi Hayashi, Tadashi Nagamatsu, Mikio Ito and Yoshio Suzuki | 187 |
| **Dynorphin-(1–13): Antinociceptive Action and Its Effects on Morphine Analgesia and Acute Tolerance** | Shiroh Kishioka, Naonori Morita, Yuji Kitabata, Tetsuji Yamanishi, Yoshiyuki Miyamoto, Masanobu Ozaki and Hiroyuki Yamamoto | 197 |
| **Significant Role of Peptide Leukotrienes (p-LTs) in the Antigen-Induced Contractions of Human and Guinea Pig Lung Parenchymas and Bronchi or Tracheas In Vitro** | Shigekatsu Watanabe-Kohno, Kiyoshi Yasui, Takeshi Nabe, Hideki Yamamura, Michiaki Horiba and Katsuya Ohata | 209 |
| **In Vivo Pharmacologic Profile of ONO-1078: A Potent, Selective and Orally Active Peptide Leukotriene (LT) Antagonist** | Naoki Nakagawa, Takaaki Obata, Tadamasa Kobayashi, Yutaka Okada, Fumio Nambu, Tamiya Terawaki and Hideki Aishita | 217 |
| **In Vitro Antagonism of ONO-1078, a Newly Developed Anti-Asthma Agent, against Peptide Leukotrienes in Isolated Guinea Pig Tissues** | Takaaki Obata, Yutaka Okada, Mariko Motoishi, Naoki Nakagawa, Tamiya Terawaki and Hideki Aishita | 227 |
| **Protective Effect of Ulinastatin against Liver Injury Caused by Ischemia-Reperfusion in Rats** | Yoshikuni Kudo, Toru Egashira and Yasumitsu Yamanaka | 239 |
| **Removal of Extracellular $Mg^{2+}$ Suppresses Sulfation of Glycoconjugates Secreted from Rabbit Trachea in Culture** | Hirofumi Kai, Aishi Kimoto, Kazuhisa Yoshitake, Sachiko Matsumoto, Yoichiro Isohama, Kazuo Takahama and Takeshi Miyata | 247 |
| **Regional Hemodynamic Effects of Betaxolol, a New Selective $\beta_1$-Blocker, and Atenolol in Conscious Spontaneously Hypertensive Rats** | Tetsuo Shoji, Yasuharu Aki, Kunisuke Horiuchi, Toshiaki Tamaki, Hong He, Akira Nishiyama, Hideyasu Kiyomoto, Yoshihide Fujisawa, Hiroshi Iwao and Youichi Abe | 253 |
| **Evidence that Stretch Receptors for Peristalsis are Located in the Mucosal Layer of the Guinea Pig Ileum** | Nagao Suzuki and Yasuo Gomi | 261 |
| **Calcium Is Essential for ATP-Induced Steroidogenesis in Bovine Adreno-cortical Fasciculata Cells** | Akiyoshi Niitsu | 269 |
| **Possible Mechanisms of Action of the Antispasmodic Agent Tiropramide in the Isolated Detrusor from Rats** | Tsutomu Uruno, Masatoshi Shirane, Koh-ichi Wada, Rieko Tsunematsu, Kouji Nagahamaya, Yutaka Matsuoka, Nobuyoshi Sunagane and Kazuhiko Kubota | 275 |


## Number 4 December 1992


| | | |
|---|---|---|
| **Protective Activity of Silipide on Liver Damage in Rodents** | Marisa Conti, Salvatore Malandrino and Maria Josè Magistretti | 315 |
| **Daily Variation in the Effects of Furosemide in Rats** | Akio Fujimura, Tsuyoshi Shiga, Toshiaki Sudoh, Kyo-ichi Ohashi and Akio Ebihara | 323 |
| **Role of Cyclic AMP in Prostaglandin-Induced Modulation of Acetyl-choline Release from the Myenteric Plexus of Guinea Pig Ileum** | Tadayoshi Takeuchi, Fumiaki Hata and Osamu Yagasaki | 327 |
| **Effect of DS-4574, a Novel Peptidoleukotriene Antagonist with Mast Cell Stabilizing Action, on Acute Gastric Lesions and Gastric Secretion in Rats** | Yoshiaki Tabuchi and Yoichi Kurebayashi | 335 |

**Regional Vascular Responses to Thromboxane $A_2$ Analogue and Their Blockade with Vapiprost, a Selective Thromboxane Receptor Blocking Drug, in Anesthetized Dogs** — Katsuhiko Noguchi, Yoshihiko Ojiri, Takao Chibana, Toshihiro Matsuzaki and Matao Sakanashi — 341

**Fluorescent Probe-Labeled Lipid Microsphere Uptake by Human Endothelial Cells: A Flow Cytometric Study** — Kimihiro Suzuki, Kimiko Takahashi, Yasunori Matsuki, Makoto Kawakami, Yasushi Kawaguchi, Toshihiko Hidaka, Yasushi Sekiyama, Yuichi Mizukami, Mitsuhiro Kawagoe and Haruo Nakamura — 349

**Involvement of Nitric Oxide in Endothelium-Dependent, Phasic Relaxation Caused by Histamine in Monkey Cerebral Arteries** — Kazuhide Ayajiki, Tomio Okamura and Noboru Toda — 357

**Involvement of $\alpha_2$-Adrenoceptors in the Sacral Micturition Reflex in Rats** — Hitoshi Kontani, Ichiro Maruyama and Takeshi Sakai — 363

**Heparin Inhibits the Progression Phase of Subcultured Endothelial Cell Proliferation in Rat Aorta** — Ikuko Kimura, Takeshi Nagaura, Takeshi Naitoh, Shinjiro Kobayashi and Masayasu Kimura — 369

## Short Communications

### Number 1 September 1992

**Cerebrovascular Injuries Induced by Activation of Platelets and Leukocytes In Vivo and Their Correction by Neurotropin** — Emil S. Gabrielian, Sergey E. Akopov, Marina R. Grigorian and Karen S. Toumasian — 51

**$\beta$-Phenyl-$\beta$-Alanine Prevents the Activation of Vagal Efferent Discharges Evoked by Baclofen and GABA in Rats** — Katsuya Yamasaki and Yoshiaki Goto — 55

**Inhibitory Effects of Magnoshinin and Magnosalin, Compounds from *"Shin-i"* (*Flos Magnoliae*), on the Competence and Progression Phases in Proliferation of Subcultured Rat Aortic Endothelial Cells** — Ikuko Kimura, Takeshi Nagaura, Shinjiro Kobayashi and Masayasu Kimura — 59

**Protection by Halothane of the Vagal Baroreflex System from Transient Global Cerebral Ischemia in Dogs** — Junichi Kurihara, Hiroshi Tomita, Nobuhiko Ochiai and Hitoshi Kato — 63

### Number 2 October 1992

**Delayed Suppressive Effect of a Low Dose of Caerulein on the Grooming Behavior Induced by the $D_1$-Receptor Agonist SKF 38393** — Yoshikatsu Masuda, Shigeo Murai, Hiroko Saito, Eiichi Abe and Tadanobu Itoh — 141

**The Effects of the Serotonin$_{1A}$ Receptor Agonist Buspirone on the Blood Glucose and Pancreatic Hormones in Rats** — Yumi Sugimoto, Jun Yamada, Ikuko Kimura, Yoshiko Watanabe and Kazuyoshi Horisaka — 145

**In Vitro Oxygenation Injury to Slices Prepared from Ischemic Kidney in Rats** — Kenji Asakura, Hanae Ikeda and Munekazu Gemba — 149

### Number 3 November 1992

**Effects of Standard Cigarette Smoke and Nicotine-Reduced Cigarette Smoke on Plasma Concentrations of Indomethacin Administered Orally to Rats** — Yutaka Gomita, Katsushi Furuno, Toshiko Yoshida, Ryozo Oishi, Kiyomi Saeki and Yasunori Araki — 281

**Effects of Isolation Housing and Timing of Drug Administration on Theophylline Kinetics in Mice** — Rui-Hai Zhou, Kimiko Tsutsumi and Shigeyuki Nakano — 287

**Calcium Channel Blocker-Like Action of Reserpine in Smooth Muscle** — Takumi Satoh, Takahiro Moriyama, Hiroyuki Kuriki and Hideaki Karaki — 291

**ATP-Sensitive $K^+$ Channels Are Gradually Recruited in the Vasodepressor Response to Adenosine in Spinally-Anesthetized Dogs** — Kensuke Orito, Keisuke Satoh and Norio Taira — 295

**Effects of Guanosine 5′-Triphosphate on the Specificity of Irreversible $\alpha_1$-Antagonisms by Phenoxybenzamine in Rabbit Thoracic Aorta** — Noriko Kokubu, Mitsutoshi Satoh and Issei Takayanagi — 299

**Effects of Nitric Oxide Synthase Inhibitors on Gastric Alkaline Secretion in Rats** — Koji Takeuchi, Tomohisa Ohuchi, Hiroki Miyake, Hiromi Sugawara and Susumu Okabe — 303

**_Kangenkaryu_ Prevents the Decrease of Cholinergic Markers Following the Nucleus Basalis Magnocellularis Lesion** — Masanori Takahashi, Kiminobu Sugaya and Kazuhiko Kubota — 307

**In Vivo Release of Dopamine by Perfusion of 1-Methyl-4-Phenylpyridinium Ion in the Striatum with a Microdialysis Technique** — Toshio Obata, Yasumitsu Yamanaka and Chuang C. Chiueh — 311

**Number 4 December 1992**

**Protective Effect of Eurystatins A and B, New Prolyl Endopeptidase Inhibitors, on Scopolamine-Induced Amnesia in Rats** — Hideo Kamei, Tomokazu Ueki, Yumiko Obi, Yasuo Fukagawa and Toshikazu Oki — 377

**Effects of Acute Administration of Nicotine on Convulsive Movements and Blood Levels of Corticosterone in Old Rats** — Masato Okamoto, Taizo Kita, Hirotsugu Okuda, Takeshi Tanaka and Toshikatsu Nakashima — 381

**Flow Cytometric Estimation of the Effect of _Ginkgo Biloba_ Extract on the Content of Hydrogen Peroxide in Dissociated Mammalian Brain Neurons** — Yasuo Oyama, Toshiko Ueha, Akemi Hayashi, Lumi Chikahisa and Katsuhiko Noda — 385

**Calcium Channel Blocker-Like Action of 1,9-Dideoxyforskolin in Vascular Smooth Muscle** — Asaki Abe and Hideaki Karaki — 389

**Identification and Characterization of the $\alpha_{2D}$-Adrenoceptor Subtype in Single Cells Prepared from Guinea Pig Tracheal Smooth Muscles** — Mitsutoshi Satoh and Issei Takayanagi — 393

**Antiproliferative Effects of the Traditional Chinese Medicine _Shimotsu-To_, Its Component Cnidium Rhizome and Derived Compounds on Primary Cultures of Mouse Aorta Smooth Muscle Cells** — Shinjiro Kobayashi, Yasuhiko Mimura, Kouhei Notoya, Ikuko Kimura and Masayasu Kimura — 397

## Rapid Communication

**Number 4 December 1992**

**KCl-Depolarization Potentiates the $Ca^{2+}$ Sensitization by Endothelin-1 in Canine Coronary Artery** — Yuji Okada, Teruyuki Yanagisawa and Norio Taira — 403